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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/729,069

12/04/2000

Nicolas Nagel

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EXAMINER

VU, DAVID

ART UNIT

PAPER NUMBER

2818

MAIL DATE

DELIVERY MODE

12/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/729,069	Applicant(s) NAGEL ET AL.	
	Examiner DAVID VU	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/15/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4,10,12,14-16 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4,10,12,14-16 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.914

1. A request for continued examination under 37 CFR 1.114, including the, fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/15/2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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2. Claims 2, 4, 10, 12, 14-16 and 24 are rejected under 35 U. S. C. 103(a) as being anticipated by Beratan et al. (US 6,177,351, hereinafter Beratan) in view of Shue et al (US Pat. 6,143,617; hereinafter Shue).

Regarding claims 24, 2 and 12, Beratan, in related text and fig. 3 discloses a microelectronic structure, comprising:

a base substrate 302 at least partially composed of an insulating material 302 and formed with at least one opening;

a metal silicide layer (plug 306/307/308) disposed on base substrate in opening;

an adhesion layer 310 disposed on base substrate 302 above and outside of opening, adhesion layer 310 containing at least one material selected from the group consisting of Zr, V, Cr (col. 5, lines 22-38);

a barrier layer 304 including an oxygen-containing iridium layer IrO/IrO₂ (col. 5, line 9) and an oxygen barrier layer, oxygen barrier layer being composed of one of iridium dioxide and ruthenium dioxide 304 (col. 5, lines 6-13);

and at least one layer of barrier layer 304 being provided over adhesion layer 310 and in direct contact with adhesion layer 310, such that at least a portion of adhesion layer 310 is located directly between metal silicide layer 307 disposed in opening and at least one layer of barrier layer 304, thus forming a layer stack of metal silicide layer 307, adhesion layer 310 and at least one layer of barrier layer 304.

Beratan discloses an adhesion layer 310 in direct contact with plug 306/307/308 but does not disclose an adhesion layer 310 in direct contact with metal silicide layer 307. The adhesion

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layer (out side the opening) in direct contact with metal silicide layer (in side the opening) when the plug or at least the top surface of the plug is formed of silicide. Shue teaches the plug 11 (fig. 2) is formed of tungsten silicide (col. 3, lines 58-65). It would have been obvious to the ordinary artisan at the time the invention was made to further modify the plug 306/307/308 of the Beratan by using tungsten silicide plug 11 as taught by Shue for the purpose of selecting a well-known material on the basis of its suitability for the intended used as a matter of obvious design choice. (*In re Leshin*, 125 USPQ 416 and MPEP 2144.07).

Regarding claim 4, Beratan discloses insulating material 302 is formed of SiN/SiO (col. 4, lines 26-35)

Regarding claim 10, Beratan discloses a metal containing-electrode 304 (Ru/Rh/Pd/Re/Ir) covering oxygen barrier layer IrO₂/RuO₂ (col. 5, lines 6-13).

Regarding claim 14, Beratan discloses metal silicide 310 contains at least one silicide selected from the group consisting of titanium silicide, tantalum silicide, chromium silicide, molybdenum silicide, tungsten silicide and platinum silicide (col. 5, lines 22-38).

Regarding claim 15, Beratan discloses a metal-oxide-containing layer 312 covering metal-containing electrode layer 304, metal-oxide-containing layer 312 being a layer selected from the group consisting of a dielectric metal-oxide-containing layer, a ferroelectric metal-oxide-containing layer and a paraelectric metal-oxide-containing layer (col. 5, lines 55-65 and fig. 3).

Regarding claim 16, Beratan discloses a noble metal layer 304 (Ru/Rh/Pd/Re/Ir) disposed on barrier layer 304 (col. 5, lines 6-13).

Response to Arguments

3. Applicant's arguments with respect to claims 2, 4, 10, 12, 14-16 and 24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke H can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/DAVID VU/
Primary Examiner, Art Unit 2818